

DATA SHEET

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HATTELAND®
DISPLAY

Manufacturer: **Hatteland Display AS**

Product: **20.1 inch Military Display (MIL)**

Type: **HM 20T07 MIL-Hx**

Last Revised: **19 Dec 2013**
Revision#: **10**

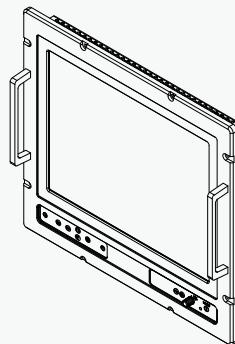
20.1 inch Military Display (MIL)

Features:

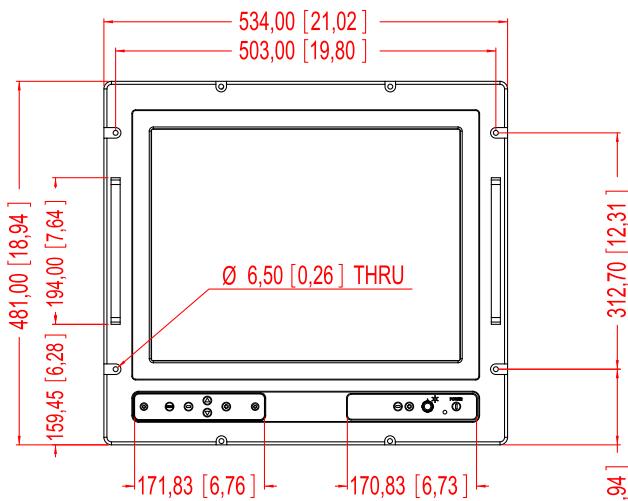
Designed for new console-mount installations as well as retrofit of aging CRT displays, the HM 20T07 MIL product provides an affordable upgrade path for integrators and platform managers who want increased safety and situational awareness, or improved shipboard systems monitoring and control.

The HM 20T07 MIL display is derived from Hatteland Display's de facto industry standard Series 1 product line. Originally introduced in 2001 and totally re-engineered in 2008, the Series 1 product line has become the standard for quality and reliability in the marine industry. The HM 20T07 MIL provides a cost effective solution for Naval display applications that require ECDIS-compliance, commercial shipping standards type-approval and military environmental qualification.

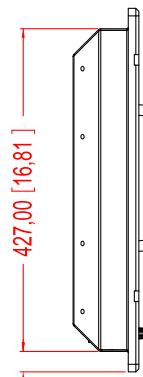
Standard features include a high contrast optically bonded LCD display, a fully dimmable backlight from 0-100% brightness level, RGB and composite video inputs, front handles, picture-in-picture and automatic image scaling, making the HM 20T07 MIL ideal for navigation and automation system installations. AC or DC power input and ECDIS color calibration are optional features of the HM 20T07 MIL.



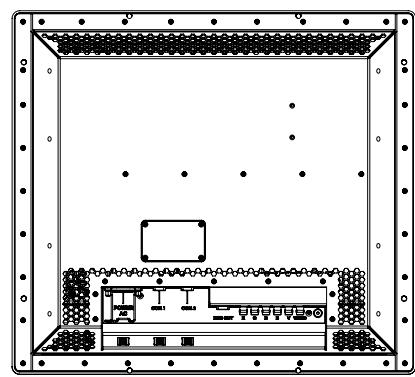
FRONT VIEW



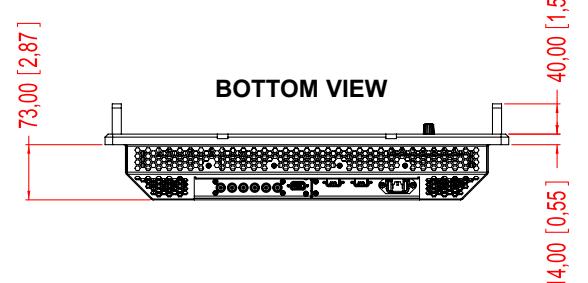
SIDE VIEW



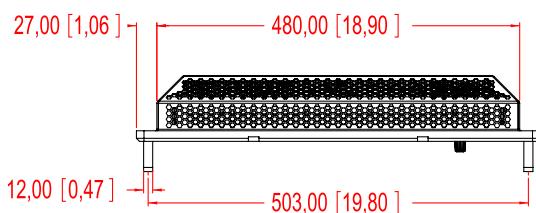
BACK VIEW



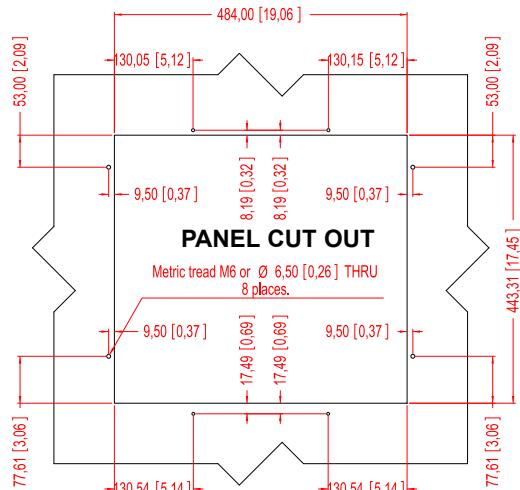
BOTTOM VIEW



TOP VIEW



PANEL CUT OUT



Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

Technical Description:

TFT Technology:

- High Quality SHARP TFT
- 20.1" viewable image size
- a-Si TFT (Thin Film Transistor) Active Matrix
- Optical Bonding Technology

TFT Characteristics:

• Native Resolution	: 1600 x 1200
• Pixel Pitch (RGB)	: 0.255 (H) x 0.255 (V) mm
• Response Time	: 20 ms (typical), rise + fall
• Contrast Ratio	: 500:1 (typical)
• Light Intensity	: 250 cd/m ² (typical)
• Viewable Angle	: +/- 88° (typical) (Up/Down/Left/Right)
• Active Display Area	: 408.0 (H) x 306.0 (V) mm
• Max Colors	: 16.7 million

Synchronization:

- Digital separate synchronization
- Composite synchronization
- Synchronization on green
- Auto detects VGA -> UXGA, interlaced and non interlaced
- Video Signal : Analog RGB 0,7Vp-p- Input Impedance 75Ω
- Horizontal : 15.0 kHz to 91 kHz
- Vertical : 56 Hz* to 75 Hz

Resolutions:

• VGA	: 640 x 480 (including 640 x 350)
• SVGA	: 800 x 600 (including 720 x 400)
• XGA	: 1024 x 768
• SXGA	: 1280 x 1024
• UXGA	: 1600 x 1200*

* Recommended in 60Hz for optimal picture quality. 56 Hz only in 800x600

Video Signals:

- Composite video (Interlaced NTSC and PAL/SECAM video)

Power Supply:

- 115&230VAC - 50/60Hz = HM 20T07 MIL-H1 models
- 24 VDC = HM 20T07 MIL-H2 models

Power Specifications

- Power Consumption: Operating 75W (typical) - 100W (max)

Environmental Performance (in addition to IEC 60945):

TEST	LEVEL	SPECIFICATION
Dry heat storage	70 deg. C	IEC 60068-2-2 (1974), Test Bd
Cold storage	-40 deg. C	IEC 60068-2-1 (1990), Test Ad
Vibration	4-33Hz	MIL STD 167-1
Shock	50g / 30ms	IEC 60068-2-27 (1987), Test Ea
Grade A Shock	Class I (hard-mounted)	MIL-S-901D
Vibration Testing	-	MIL-STD-167-1 *

* Console mounted.

Mechanical Description:

Physical Dimensions:

- 534.00 (W) x 481.00 (H) x 147.00 (D) mm (with handles)
- 21.02" (W) x 18.94" (H) x 4.99" (D)
- Weight: 14 kg approx

Input Signal Terminal:

• RGB Signal IN	: 5 x BNC Connectors (RGBHV)
• RGB Signal OUT	: 1 x 15p HD D-SUB (female)
• Comp. Video IN	: 1 x BNC Connector
• Serial Remote Contr.	: 2 x 9p D-SUB
• AC Power IN	: Std IEC Inlet
• DC Power IN	: Screw terminal
• If Touch Screen I/O	: 1 x 9P D-SUB (female) RS-232 communication

User Controls:

• On Front bezel	: Power On/Off (push button)
	+ Brightness Control Rotary Knob
	+ 2 x hotkeys support (push buttons)
	+ Mode Status LED
• Behind bezel hatch	: On Screen Display control (OSD/OSM)
• Behind rear hatch	: Serial Remote Control DIP-switches/settings

Environmental Considerations:

• Operating	: Temperature -15 deg. C to +55 deg. C
	- Humidity up to 95%
• Storage	: Temperature -40 deg. C to +70 deg. C
	- Humidity up to 95%
• IP Rating	: Protection (EN60529): IP66 front - IP20 rear
• Compass Safe Dist.	: Standard: 115cm Steering: 70cm

EMI Testing:

The unit is tested according to the following:

MIL-STD 461E, 1999

- CE 101 - Conducted emission, 30 Hz - 10 kHz
- CE 102 - Conducted emissions, 10 kHz - 10 MHz
- CS 101 - Conducted susceptibility, 30 Hz - 50 kHz
- CS 114 - Conducted susceptibility, 10 kHz - 200 MHz
- CS 116 - Conducted susceptibility, damped oscillatory waves
- RE 101 - Radiated emission, H-field, 30 Hz - 100 kHz
- RE 102 - Radiated emissions, E-field, 10 kHz - 10 GHz
- RS 101 - Radiated susceptibility, H-field, 30 Hz - 100 kHz
- RS 103 - Radiated susceptibility, E-field, 2 MHz - 18 GHz

Factory Options:

- Resistive Touch Screen (8-wire)
- Color Calibrated models (ECDIS)

Accessories:

- JH MMDBR STD-A1 = Bracket (See user manual)
- JH MMDRO STD-A1 = Rotary Bracket (See user manual)
- JH 20TSV STD-B1 = Sun Visor (See user manual)
- JH VESA 20T06-A1 = Vesa Bracket (See user manual)
- JH 20TWC STD-B1 = Water Cover (See user manual)

Common Type Numbers:

• HM 20T07 MIL-H1	= AC Power, optically bonded
• HM 20T07 MIL-H2	= DC Power, optically bonded

TESTING / APPROVALS & CERTIFICATES

This product have been tested / type approved by the following classification societies:

EN60945 4th (IEC945 4th)
MIL-STD 461E, 1999

LRS - Lloyd's Register of Shipping

MIL-S-901D Class I (hard-mounted) Grade A Shock
ClassNK - Nippon Kaiji Kyokai

ABS - American Bureau of Shipping

DNV - Det Norske Veritas
EU RO MR - Mutual Recognition

BV - Bureau Veritas
GL - Germanischer Lloyd
CCS - China Classification Society